

TSO Challenges and cultures

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Introduction

- Engaging in nuclear energy is a long term commitment, and **different phases require different technical capabilities** in the regulatory system: new build licensing; operational oversight; environmental and public health issues; emergency preparedness; waste management; decommissioning;
- The same is true, on a lesser scale, for **radiological regulatory matters**: medical technologies are innovating at a fast pace; NORM industries require oversight at all stages of their life cycle.
- **Increasing societal concerns** about risks induced by nuclear or radiological operations, visible through the growing use of internet and social networks, build up expectations from the regulatory system, which require adequate scientific expertise.
- **As a consequence, the national regulatory system needs to be technically pertinent and sustainable on a time scale of several decades. Experience shows that a performant TSO capability helps address this challenge.**

Why is sustainability an issue for nuclear regulatory organisations?

- As national institutions with an effective legal basis for their missions, the perennity of regulatory organisations is not usually questioned. Sustainability remains implicit...
- However, regulatory organisations do have to cope with the challenges induced by changes in their environment, and an explicit strategic approach to **technical sustainability** can help overcome such challenges more effectively.

The four pillars of regulatory sustainability

- **Institutional strength**
 - Independance
 - Anchorage in society : government and parliament, professional organisations, NGO's, media, ...
 - Funding system
- **People**
 - Authority and Staff members
 - Scientific and Technical « cultural ecosystem » (TSO, universities, academies,...)
- **Technical resource**
 - Knowledge,
 - Data,
 - Tools : radiological surveillance, models, emergency intervention
- **Stakeholder and public confidence**
 - Communication
 - Engagement, accountability
 - Values of safety, security, and protection must be upheld at all times.

Strategies to consolidate sustainability

- **Evaluation**, to record change and effects of change, and to map evolution needs,
- « **Linkage** » of activities and cultures, to optimise the use of existing resources with an « **ecosystem** » approach, and prepare for the future,
- **Cooperation**, to learn from others and to develop mutual support.

Evaluation

- Periodic assessment of strengths and weaknesses, threats and opportunities is a necessity to anticipate changes in internal or external environment, and adapt strategies
- IAEA has developed tools to guide auto-evaluation (SARCON), to provide a support service (INIR) or to organise peer evaluation (IRRS/IRIS)
- **IAEA is currently preparing a TSO self-evaluation « tool » to help member states develop a vision for their future technical and scientific support resources, on the basis of the IAEA TSO Tecdoc and of experience return from member states.**

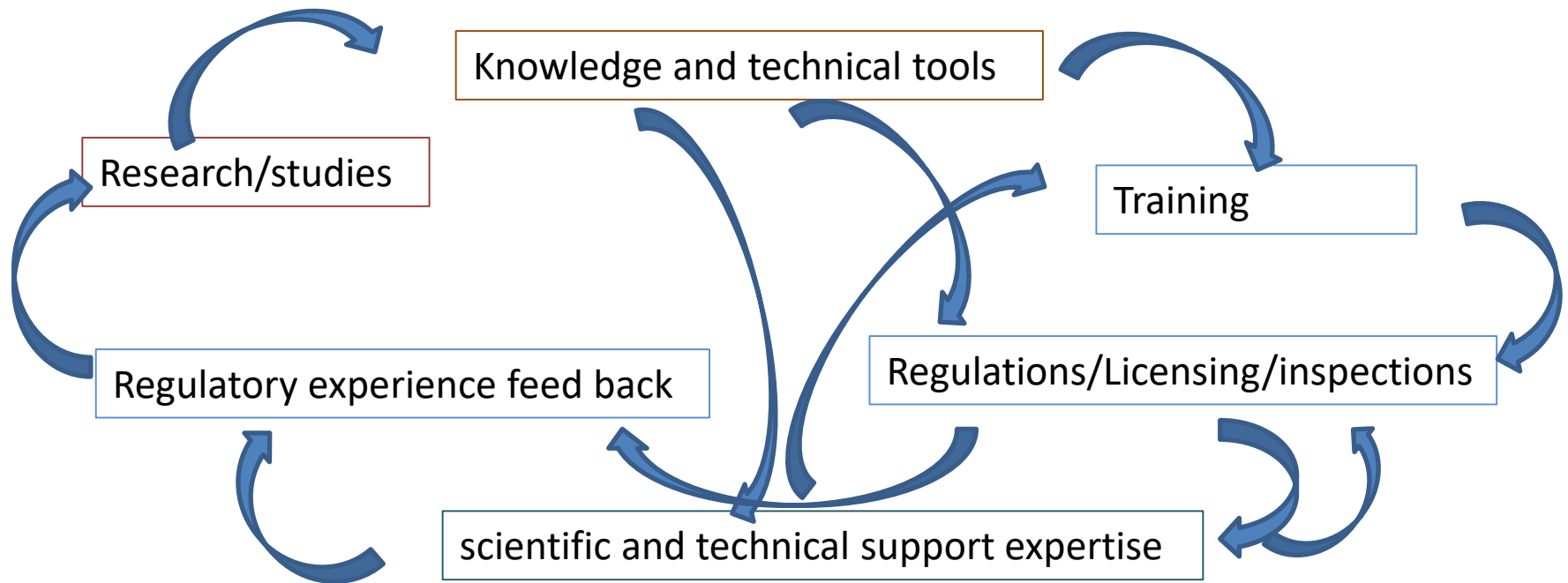
Some sustainability issues for TSO capacity building

- **Funding**
 - Stability, adequacy and sustainability
 - Impact on independence of the RB
- **Staff**
 - Safety culture and leadership
 - Scientific culture
 - Quality culture
 - Personnel interactions within the regulatory system: mobility, salary levels, ...
- **Technical resource**
 - Access to new **safety related knowledge**, and maintaining existing knowledge to address needs of regulatory missions
 - Access to and development of **technical infrastructures** (nuclear safety and radiological protection)
 - Hierarchised identification of missing elements of resource (medium and long term **capacity building**)

« Linkage »

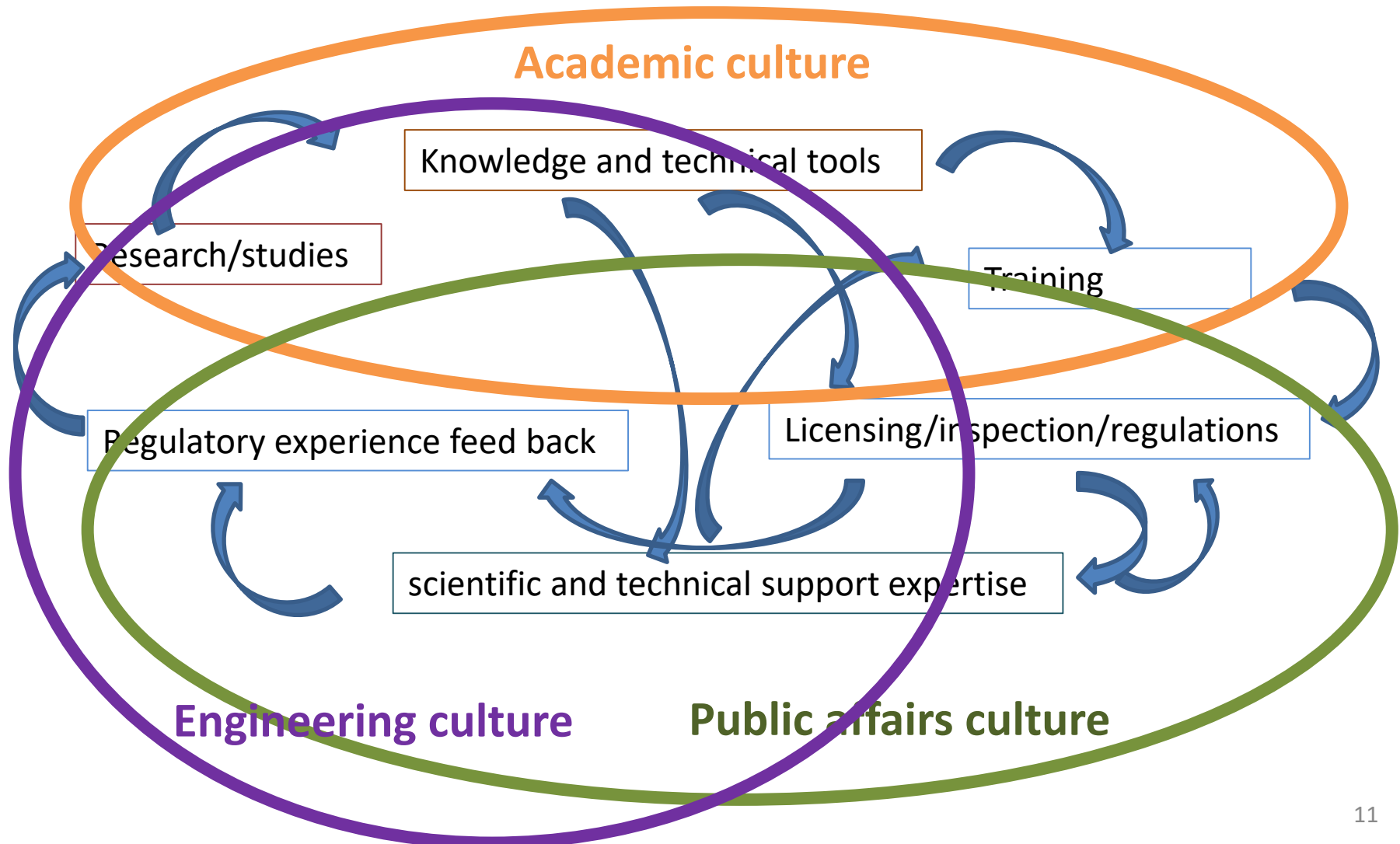
- « Linkage » provides feed back or forward mechanisms bringing together different types of regulatory related activities, to ensure permanent improvement and natural adaptation to changing environments (**an « ecosystem » approach**)
- Because of a natural tendency to prefer less demanding « silo solutions », **« Linkage » does not occur unless it is planned, organised, overseen, and imbedded in local cultures.**

« Linkage »: a key to scientific and technical regulatory sustainability



Regulatory related activities should not be seen as separate, but as parts of an inclusive process which is vital for long term sustainability. The links must therefore be analysed as part of the process and not just as « outsourcing » solutions

« Linkage » succeeds best if contributing cultures form a « cultural ecosystem »



The optimal « linkage » approach is country culture dependent .

- There are many possible solutions to organise the complete set of regulatory related activities, depending on national factors and potentialities for future evolutions
- The three basic culture components should be provided an environment where they are at the same time respected, and invited to interact closely (ecosystem approach).
- Training of managers should take this holistic dimension into account (leadership for safety)
- IAEA's TSO initiative aims to offer member states, on request, guidance and support to help define an appropriate national strategy for a sustainable TSO capacity building effort.

TSO development: A specific challenge for embarking or recent nuclear power countries

- Three major constraints: time scales, scarcity of human resources, and economic factors
- Competent national resources potentially available to contribute to a TSO development are often also engaged at the side of the nuclear operator
- The dependance towards the technology vendor partners: a short term solution and a potential long term problem for regulatory control issues
- Because there is no « one size fits all » solution, there is no international model for TSO functions, only experience based guidelines as provided in TECDOC 1835

International cooperation for TSO development

- It is an essential strategy instrument for all countries, because no country is host on its own to the whole of knowledge pertinent for nuclear safety, security and radiological protection.
- In the long term cooperation only works if there is sufficient mutual benefit for all parties concerned, so early identification of benefits and dependences over time is a key.
- Cooperation frameworks may benefit from a regional /multilateral approach.
- IAEA's « tool box » for technical cooperation provides valuable common language and tested methodologies to support member states in their cooperative efforts. IAEA « TSO initiative » will facilitate the initiation and deployment of TSO development strategies in member states requesting such support.

An example of cooperation between IAEA and EU/INSC towards regulatory sustainability: the Nuclear and radiological safety leadership international school project

- An innovative initiative to develop professional training for managers on culture related aspects,
- A first « pilot » school session in Nice (France) was held end 2017, on the basis of experience based case studies and of IAEA GSR-2 safety requirements,
- A joint IAEA/EC project, with the support of ENSTTI and the Côte d'Azur University.

Summary

- **The national regulatory system needs to be technically pertinent and sustainable on a time scale of several decades.** Reliance on vendor country technical support can be part of a solution in the short term, but can become problematic over the medium and long term.
- **A national TSO capacity is a powerful tool to consolidate the medium and long term sustainability of regulatory control effectiveness**
- **A TSO capacity building strategy should :**
 - Take into account a **realistic evaluation of needs (priorities, time to delivery)**,
 - Include an outreaching approach to help build up an « **ecosystem of complementary knowledge and cultures** », suitable to provide sustainable support to the RB, and adapted to the institutional landscape of the country
 - **make the best use of available cooperation possibilities**, including through IAEA
- **There is no « one size fits all » model for establishing a national TSO capacity.** The organisation, funding system, technical and scientific priorities, staffing & training methods have to be suited to the general organisation of the country.
- Following the publication of TECDOC 1835, **IAEA member states may benefit from the Agency's « TSO initiative » to help design a suitable national strategy for TSO capacity building.**

Thank you for your attention